

## Claims

What is claimed is:

- 1           1.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter comprising:  
3         a photodetector for providing a modulated current;  
4         a transimpedance amplifier coupled to said photodetector receiving  
5     said modulated current and providing an output voltage signal;  
6         an output buffer coupled to said transimpedance amplifier receiving  
7     said output voltage signal; and  
8         said output buffer including a differential transistor pair; said  
9     transimpedance amplifier output voltage signal applied to said differential  
10    transistor pair; a pair of source degeneration resistors connected to said  
11    differential transistor pair; and a capacitor coupled between connections of  
12    said differential transistor pair and said source degeneration resistors; said  
13    capacitor having a selected value for reducing detector jitter.
- 1           2.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 wherein said  
3     differential transistor pair is a high gain amplifier and is responsive to said  
4     applied transimpedance amplifier output voltage signal for accentuating high  
5     slew rates over lower slew rates.
- 1           3.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 wherein said  
3     capacitor passes high slew rate transimpedance amplifier output voltage  
4     signals and limits low slew rate transimpedance amplifier output voltage  
5     signals.
- 1           4.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 wherein said  
3     photodetector includes a lateral photodetector structure.
- 1           5.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 includes a current  
3     source and a current sink for biasing said photodetector.

1           6.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 wherein said  
3     transimpedance amplifier output voltage signal applied to said differential  
4     transistor pair is a differential output voltage signal and said output buffer  
5     providing a differential detector voltage signal.

1           7.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 wherein said pair  
3     of source degeneration resistors connected to said differential transistor pair  
4     control gain of said differential transistor pair.

1           8.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 wherein said  
3     output buffer includes a pair of drain load resistors connected between said  
4     differential transistor pair and a high power supply voltage.

1           9.     A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 wherein said  
3     differential transistor pair is formed by a pair of metal semiconductor field  
4     effect transistors (MESFETs).

1           10.    A detector for short wave fiber optic communications having  
2     compensation to reduce detector jitter as recited in claim 1 further includes  
3     AC coupling capacitors coupled between said photodetector and said  
4     transimpedance amplifier.

1           11. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter comprising:  
3           a lateral photodetector biased by a current source and a current sink  
4 for providing a modulated current signal;  
5           a transimpedance amplifier coupled to said lateral photodetector  
6 receiving said modulated current signal and providing a differential output  
7 voltage signal;  
8           an output buffer coupled to said transimpedance amplifier receiving  
9 said differential output voltage signal; and  
10          said output buffer including a differential transistor pair; said  
11 differential output voltage signal of said transimpedance amplifier applied to  
12 said differential transistor pair; a pair of source degeneration resistors  
13 connected to said differential transistor pair; and a capacitor coupled  
14 between connections of said differential transistor pair and said source  
15 degeneration resistors; said capacitor having a selected value to reduce  
16 detector jitter; and said capacitor passing high slew rate signals and limiting  
17 low slew rate signals.

1           12. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter as recited in claim 11 wherein said  
3 differential transistor pair is a high gain amplifier and is responsive to said  
4 applied differential output voltage signal for accentuating high slew rates  
5 over lower slew rates.

1           13. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter as recited in claim 11 wherein said  
3 output buffer includes a pair of drain load resistors connected between said  
4 differential transistor pair and a high power supply voltage.

1           14. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter as recited in claim 11 wherein said  
3 output buffer includes a current source connected between said pair of  
4 source degeneration resistors and ground.

1           15. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter as recited in claim 11 wherein said  
3 differential transistor pair is formed by a pair of high gain metal  
4 semiconductor field effect transistors (MESFETs).

1           16. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter as recited in claim 11 wherein said  
3 output buffer includes a unity gain source follower amplifier coupled to said  
4 differential transistor pair.

1           17. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter as recited in claim 11 wherein said  
3 output buffer includes a current reference source and a current source  
4 coupled to said current reference source and connected between said pair of  
5 source degeneration resistors and ground.

1           18. A detector for short wave fiber optic communications having  
2 compensation to reduce detector jitter as recited in claim 11 includes AC  
3 coupling capacitors coupled between said lateral photodetector and said  
4 transimpedance amplifier; said AC coupling capacitors for passing  
5 predefined frequency modulated current signals and blocking low frequency  
6 modulated current signals.

1           19. A buffer circuit for a signal detector having  
2 compensation to reduce detector jitter comprising:  
3 a differential transistor pair;  
4 a voltage signal applied to said differential transistor pair;  
5 a pair of source degeneration resistors connected to said differential  
6 transistor pair; and  
7 a capacitor coupled between connections of said differential transistor  
8 pair and said source degeneration resistors; said capacitor having a selected  
9 value for reducing detector jitter.

1           20. A buffer circuit for a signal detector having compensation to  
2 reduce detector jitter as recited in claim 19 wherein said differential transistor  
3 pair is formed by a pair of high gain metal semiconductor field effect  
4 transistors (MESFETs).